

# CARNATION WASTEWATER TREATMENT SYSTEM

Where does it go after you flush, brush or do the dishes? A step-by-step overview of the Carnation Wastewater Treatment System

## COLLECTION

### RESIDENTIAL COMMERCIAL



- 1 Wastewater from sinks, drains and toilets** travels from homes, schools and businesses in Carnation and makes its way through 11 miles of pipe to get to the vacuum station.
- 2 The AIRVAC vacuum station** creates suction in the sewer lines and pulls wastewater to the station where it is collected in a tank. Pumps then transfer the sewage through a force main to the neighboring treatment plant in bursts of 1,200 gallons.



## PRE-TREATMENT— TAKING THE TRASH OUT

- 3 The wastewater arrives at the Headworks Building.** Before we can treat the water, we have to remove the trash (anything thicker than a nickel that isn't biodegradable) from the water. This trash is washed and compacted, goes into a dumpster and taken to the dump weekly. Check out <http://dnr.metrokc.gov/wtd/carnation/> for disposal tips for lots of stuff.



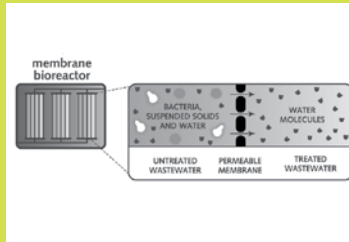
Produced by King County DNRP,  
Visual Communications & Web Unit.  
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## TREATMENT—CLEANING THE WATER TO PROTECT PEOPLE AND THE ENVIRONMENT

- 4 Natural treatment – using biology and oxygen.** Wastewater enters two 21-foot deep aeration basins that are filled with microorganisms (a.k.a. good germs and bacteria) and oxygen. When given a good level of oxygen, pH and temperature the microorganisms reproduce quickly, eating and breaking down organic material like human and food waste. The tanks are monitored to ensure the environment is just right for these “good bugs.”



- 5 Membrane Bioreactor Technology – fine filters remove bacteria and organic matter.** The membranes are hollow, hair-like strands with small pores. Each strand has millions of tiny pores that suck in water molecules, filtering out even most bacteria.



- 6 Ultraviolet Light – disinfecting the filtered water.** Ultraviolet light inactivates the remaining microorganisms, ensuring that the cleaned water is safe to return to rivers and wetlands. It is very effective and less harmful than chlorine.



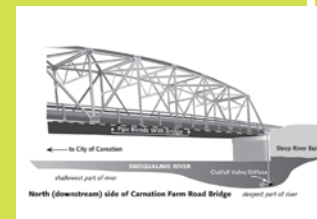
- 7 The stand-pipe – storage for clean reusable water.** The silo-looking structure is a stand-pipe. It stores the cleaned water and allows gravity to transport the water to the discharge point.



**Alternative Formats**  
206-296-8361 (voice) or 711 (TTY)

## DISCHARGE – RETURNING THE CLEANED WATER TO THE ENVIRONMENT

- 8 Moving clean water.** The effluent pipeline is a 12-inch pipe that travels about 1.5 miles to Carnation Farm Road Bridge - the location for both the river discharge and the wetland enhancement discharge locations.
- 9 River discharge.** The river outfall is located on the Carnation Farm Road Bridge. Utilizing an innovative downspout design, it discharges into the deepest part of the water where it will get thoroughly mixed with the river water without disturbing the river bottom. This design minimizes impacts to fish and spawning redds in the river.



The river outfall serves as a backup discharge location to the wetland. It will only be used when maintenance needs or equipment problems prevent the facility from producing Class A reclaimed water. (When the river outfall is in use, the plant still produces highly-treated water that meets or exceeds river discharge standards.)

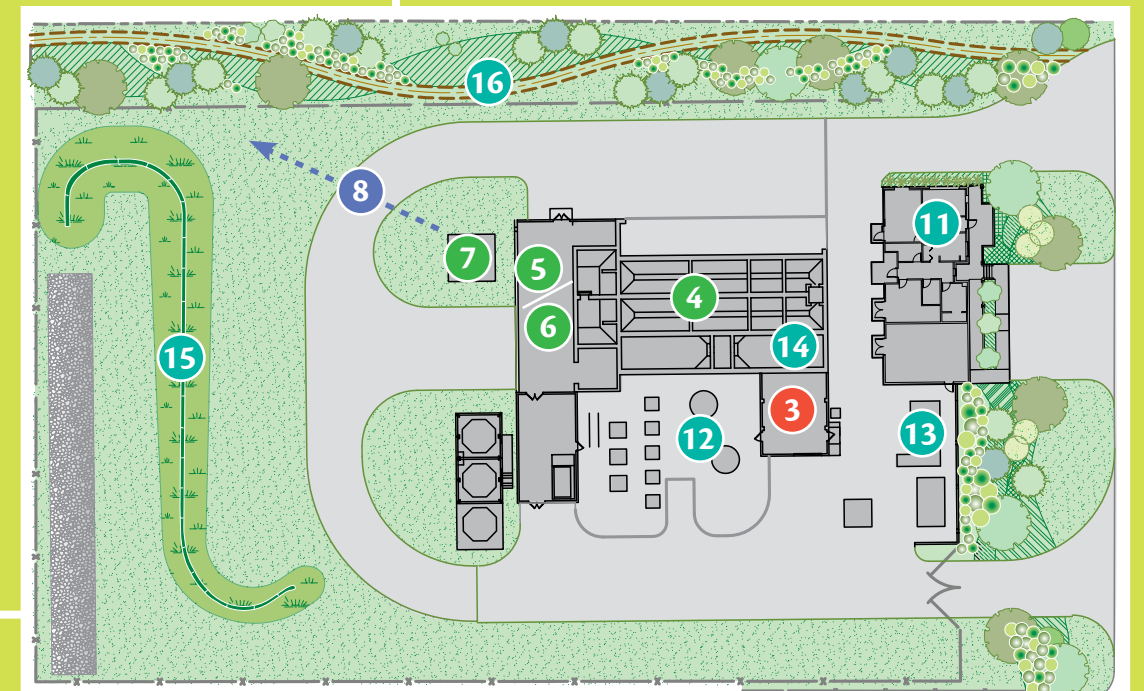
- 10 Wetland enhancement discharge.** A wetland enhancement at Chinook Bend Natural Area will use Class A reclaimed water from the Carnation treatment plant to enhance wetland hydrology and provide habitat for a variety of aquatic and wildlife species.



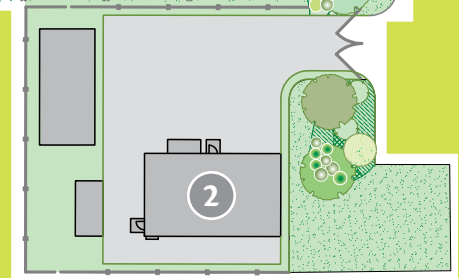
*Class A reclaimed water is water that has been treated to such a high level that it can be used safely and effectively for nearly everything except drinking. The water produced by the plant will meet the strictest reliability and redundancy standards set by the state's departments of Ecology and Health. Reclaimed water goes through more rigorous filtering and disinfecting processes than conventional sewage treatment.*

## SUPPORTING STRUCTURES

- 11 Operations building, water quality laboratory**
- 12 Odor control.** The plant is equipped with large deep-bed carbon scrubbers that continuously pull the air from treatment process areas through pipes to a central location. The carbon in the scrubbers pick up odoriferous compounds as the air is filtered.
- 13 Back up power generator** so we can operate 24/7—even when the power goes out.
- 14 Solids handling.** Solids are stored and trucked to the South Treatment Plant in Renton.



- 15 Stormwater management.** A bioswale and infiltration trench on the west side of the treatment plant will assist with stormwater management.
- 16 The trail that connects to Tolt MacDonald Park.**



## IN THE KITCHEN: Have a fat-free sewer

**G**rease will stick to household and sewer pipes. Over time, grease build-up can block pipes and cause sewage backups. Home garbage disposals don't keep grease out of the plumbing system, they only shred solid material into smaller pieces. Additives that claim to dissolve grease may pass it down the line and cause problems in other areas. Follow these steps to keep things moving along.

**RECYCLE YOUR FOOD WASTE—DON'T PUT IT DOWN THE DRAIN**



The average single-family household throws away about 45 pounds of food scraps and food-soiled paper every month that could be easily composted.



**DO** scrape grease and food scraps from cooking surfaces into a container and put in the trash or compost them.



**DON'T** put grease, fats or oil of any type down your drain or garbage disposal.



**DO** put baskets/strainers in sink drains to catch food scraps and other solids—and then empty them in the trash for disposal.



**DON'T** put produce stickers down the drain. While small, they don't break down!



**DO** compost food in your own back yard. <http://www.metrokc.gov/dnrp/swd/garbage-recycling/backyard-composting.asp>.



**DO** subscribe to food and yard waste collection from WasteManagement. Items such as vegetable and fruit, plate scrapings, egg shells, coffee grounds and tea bags, paper towels and napkins—even greasy pizza delivery boxes—can all be recycled in your yard waste cart. Check out <http://wmnorthwest.com/carnation/yardwaste.html> for more information.



**King County**

Department of  
Natural Resources and Parks  
Wastewater Treatment Division



**City of Carnation**

For more information about what you can do to protect the environment, call the City of Carnation at 425-333-4192, or King County at 206-296-8361.



Protecting  
water quality  
starts with  
each of us!

*King County Wastewater Treatment Division and the City of Carnation  
Protecting public health and the environment*

# LET'S TALK TRASH

**IN THE BATHROOM:  
your toilet  
is not a  
trash can**

**F**lushing the wrong thing down the toilet damages your household plumbing, your environment and your sewer system. Flush only toilet paper. Use the trash can for everything else!



For more information visit: <http://dnr.metrokc.gov/wtd/carnation> or [www.ci.carnation.wa.us](http://www.ci.carnation.wa.us)

**ALL THESE ITEMS BELONG IN THE TRASH CAN  
(AND ANYTHING OVER TWO INCHES IN DIAMETER)**



**Band-aids & bandage wrappers**



**Cleaning wipes**



**Tampons & applicators**



**Kitty litter**



**Dental floss & teeth whitening strips**



**Disposable diapers, nursing pads & baby wipes**



**Mini & maxi-pads**



**Cotton balls, swabs & pads**



**Expired & unused prescription or over-the-counter medications.**



**Condoms**



**Facial wipes**



**Hair**

**Check out the Medicine Take Back Program at [www.product-stewardship.net/productsPharmaceuticalsMedicines.html](http://www.product-stewardship.net/productsPharmaceuticalsMedicines.html).**

*Size matters!  
Anything over two  
inches in diameter  
will clog the pipes.*

